



Progress towards a MenABCWY vaccine

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Pro's and Con's of combined MenABCWY vaccine vs separate immunisation

- Pro's
 - Potentially
 - Simplifies immunisation schedules
 - Reduces costs
 - could make introduction of MenB into an adolescent schedule cost effective?
 - Enhances uptake
 - Reduces number of injections
 - Reduces distress
- Cons
 - Potentially
 - Reduces flexibility*
 - Reduces adaptability to local epidemiology*
 - Increases reactogenicity
 - Reduces immunogenicity
 - Increases risks of interference with concomitant vaccines

Are likely to require a 2 dose schedule, so may not reduce number of immunisation episodes

* Dependent on whether MenABCWY would be licensed in addition to, or as a replacement for, existing meningococcal vaccines

Studies combining rlp-2086 (Trumenba) with MenACWY-CRM (Nimenrix)

Show/Hide Columns						
Row	Saved	Status	Study Title	Conditions	Interventions	Locations
1	<input type="checkbox"/>	Recruiting	A Clinical Trial to Assess the Safety, Tolerability and Immunogenicity of MenABCWY in Healthy Infants	<ul style="list-style-type: none"> Meningococcal Vaccine 	<ul style="list-style-type: none"> Biological: MenABCWY Biological: Bivalent rLP2086 (60-µg Dose) Biological: Bivalent rLP2086 (120-µg Dose) (and 3 more...) 	<ul style="list-style-type: none"> Hospital Clínico Universitario Santiago de Compostela Santiago de Compostela, A Coruna, Spain Hospital Universitari Germans Trias i Pujol Badalona, Barcelona, Spain Hospital Universitari General de Catalunya Sant Cugat del Valles, Barcelona, Spain (and 15 more...)
			Infant study (N = 1325) launched Nov 2020			
2	<input type="checkbox"/>	Recruiting	MenABCWY Noninferiority Study in Healthy Participants ≥10 to <26 Years of Age	<ul style="list-style-type: none"> Meningococcal Vaccine 	<ul style="list-style-type: none"> Biological: MenABCWY Biological: Saline Biological: Trumenba Biological: MenACWY-CRM 	<ul style="list-style-type: none"> Alabama Clinical Therapeutics, LLC, Birmingham Pediatric Associates Birmingham, Alabama, United States Central Research Associates, Inc. Birmingham, Alabama, United States Fiel Family and Sports Medicine, PC/CCT Research Tempe, Arizona, United States (and 75 more...)
3	<input type="checkbox"/>	Recruiting	A Trial to Describe the Safety and Immunogenicity of MenABCWY When Administered on 2 Schedules	<ul style="list-style-type: none"> Meningococcal Vaccine 	<ul style="list-style-type: none"> Biological: MenABCWY Biological: Saline 	<ul style="list-style-type: none"> Alliance for Multispecialty Research, LLC Mobile, Alabama, United States California Research Foundation San Diego, California, United States Nona Pediatric Center Orlando, Florida, United States (and 17 more...)
4	<input type="checkbox"/>	Recruiting	A Trial to Describe the Immunogenicity and Safety of 2 Doses of Bivalent rLP2086 (Trumenba) and a Pentavalent Meningococcal Vaccine in Healthy Subjects ≥10 to <26 Years of Age.	<ul style="list-style-type: none"> Meningococcal Vaccine 	<ul style="list-style-type: none"> Biological: MenABCWY Biological: Saline Biological: rLP2086 Biological: MenACWY-CRM 	<ul style="list-style-type: none"> Alabama Clinical Therapeutics, LLC, Birmingham Pediatric Associates Birmingham, Alabama, United States Alabama Clinical Therapeutics, LLC, Birmingham Pediatric Associates Birmingham, Alabama, United States Optimal Research Huntsville, Alabama, United States (and 70 more...)

Figure 1. Percentage of Subjects With ≥ 4 -Fold Rises as Measured in hSBA to (A) MenA, MenC, MenW, and MenY Test Strains at 1 Month After Doses 1 and 2 and (B) MenB Test Strains at 1 Month After Dose 2

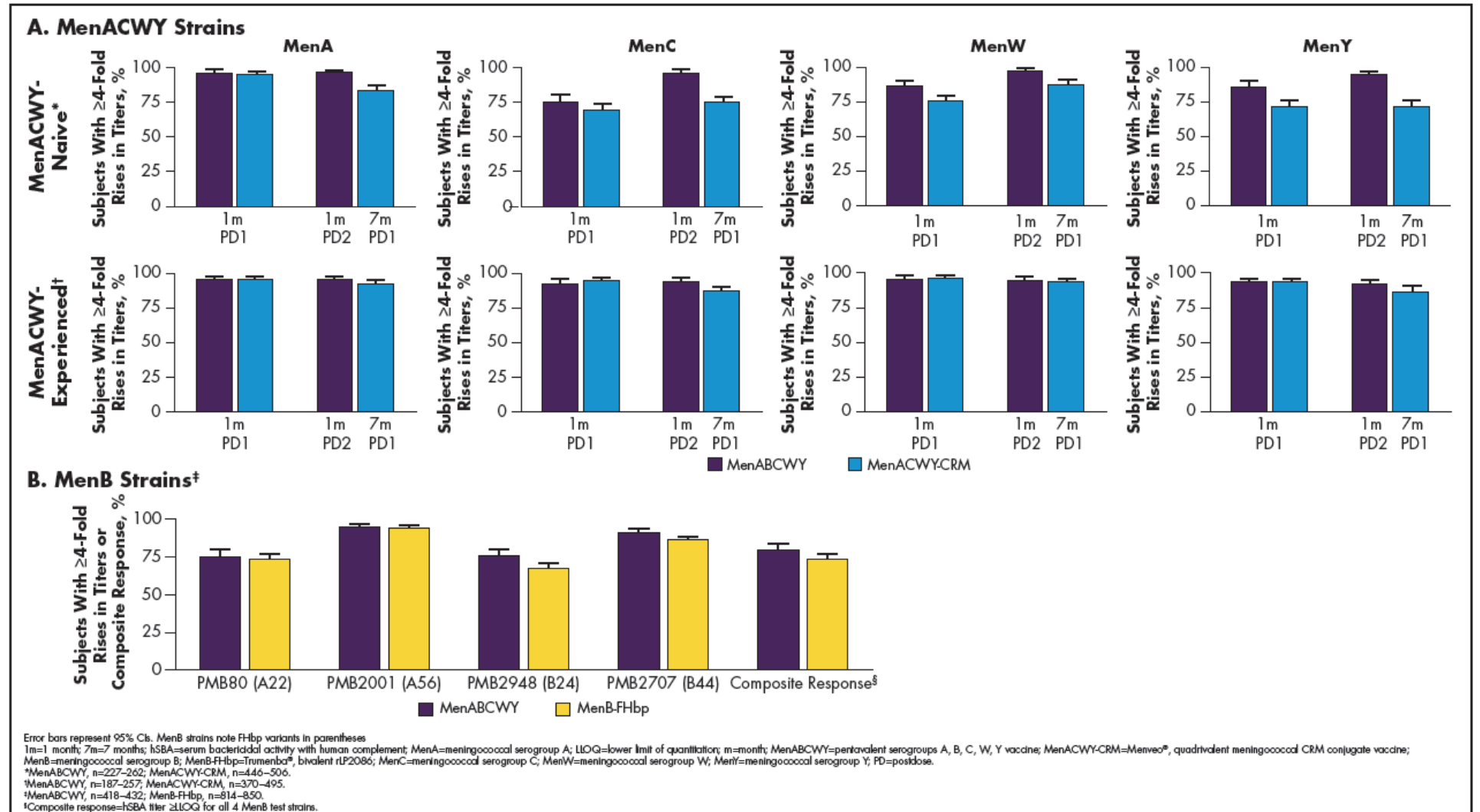
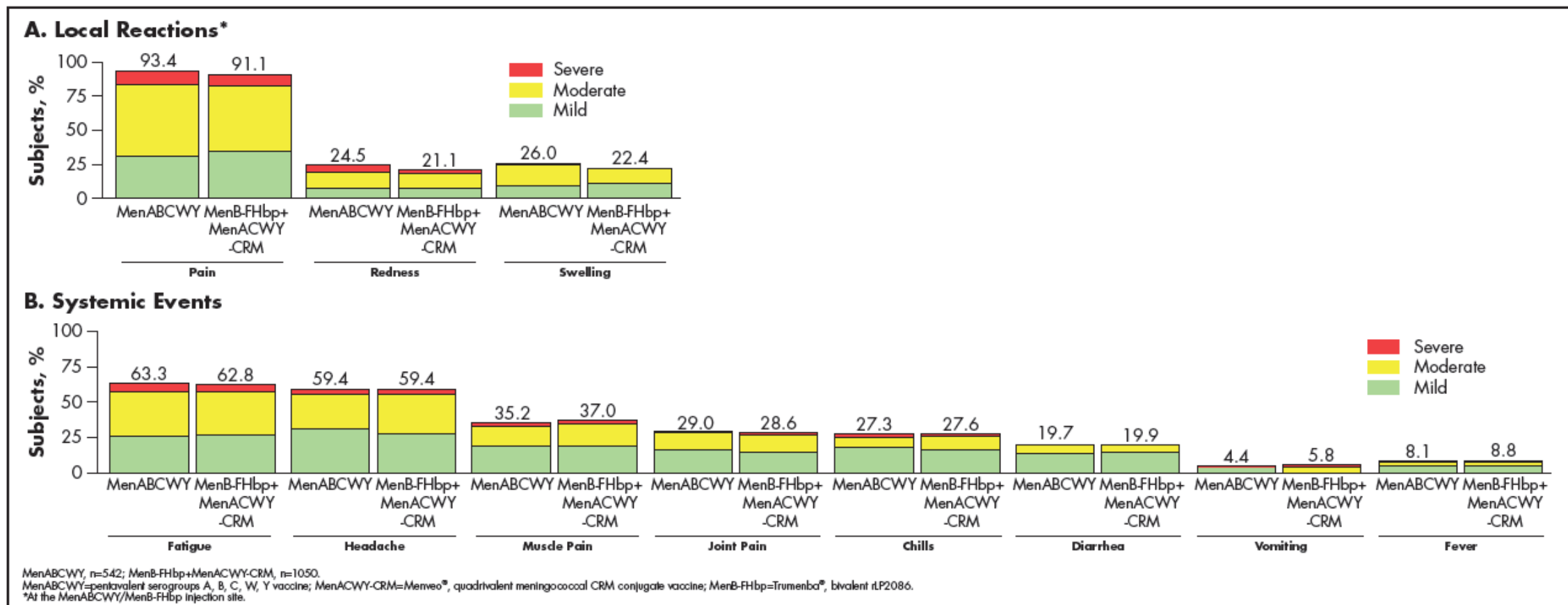


Figure 2. (A) Local Reactions and (B) Systemic Events Reported Within 7 Days After Any Dose



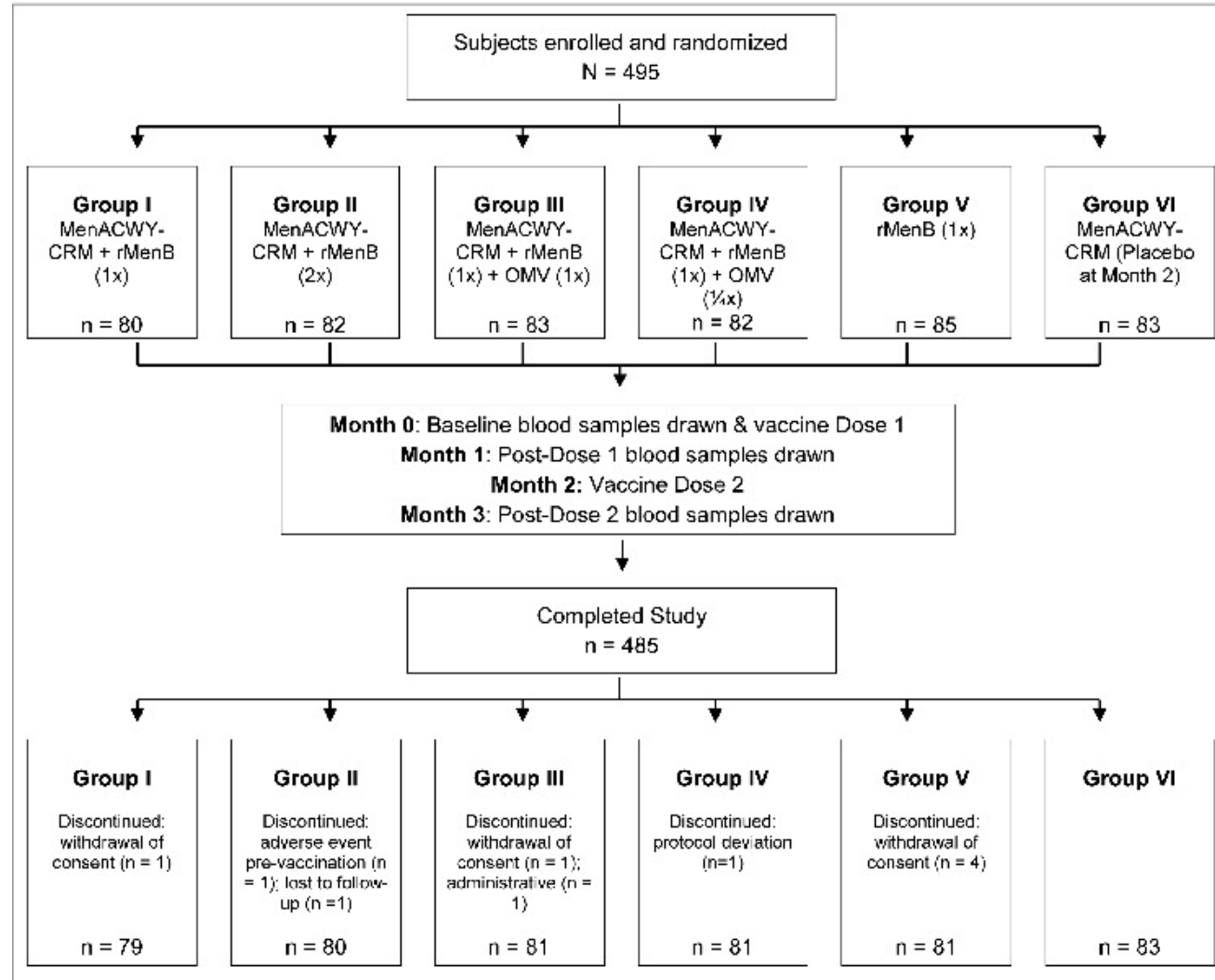


Five studies combining 4CMenB with MenACWY-CRM (Menveo)

5 clinical trials
evaluating
MenACWY
+4CMenB

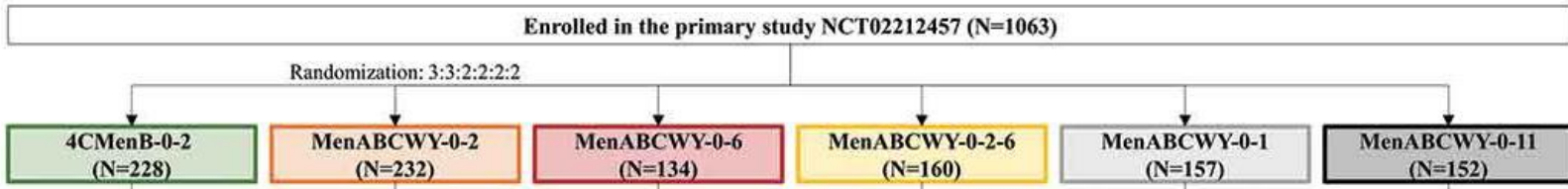
Row	Saved	Status	Study Title	Conditions	Interventions	Locations
1	<input type="checkbox"/>	Completed Has Results	A Study to Evaluate 4-year Antibody Persistence and Booster Response Following MenABCWY Vaccination in Healthy Adolescents and Young Adults Who Previously Participated in Studies V102_02 (NCT01210885) and V102_02E1 (NCT01367158)	<ul style="list-style-type: none"> Meningococcal Disease Infections, Meningococcal 	<ul style="list-style-type: none"> Biological: MenABCWY+OMV vaccine 	<ul style="list-style-type: none"> GSK Investigational Site Santiago, Chile GSK Investigational Site Bogota, Colombia GSK Investigational Site Bogota, Colombia (and 4 more...)
2	<input type="checkbox"/>	Completed Has Results	Study to Assess Potential Immune Interference When GlaxoSmithKline (GSK) Biologicals' MenABCWY Vaccine is Administered to Healthy Subjects Aged 10-25 Years	<ul style="list-style-type: none"> Meningitis, Meningococcal 	<ul style="list-style-type: none"> Biological: MenABCWY vaccine Biological: rMenB+OMV NZ (Bexsero) vaccine Biological: MenACWY (Menveo) vaccine 	<ul style="list-style-type: none"> GSK Investigational Site Hradec Kralove, Czechia
3	<input type="checkbox"/>	Recruiting	Immunogenicity and Safety Study of GSK's MenABCWY Vaccine in Healthy Adolescents and Adults Previously Primed With MenACWY Vaccine	<ul style="list-style-type: none"> Meningitis, Meningococcal 	<ul style="list-style-type: none"> Combination Product: MenABCWY vaccine Combination Product: Placebo Biological: MenACWY vaccine Combination Product: MenB vaccine 	<ul style="list-style-type: none"> GSK Investigational Site Houston, Texas, United States GSK Investigational Site Ciudad Autonoma Buenos Aires, Buenos Aires, Argentina GSK Investigational Site Taringa, Queensland, Australia GSK Investigational Site Newmarket, Ontario, Canada
4	<input type="checkbox"/>	Completed Has Results	Study to Assess the Immunological Long-term Persistence of Antibodies (Abs) 2 Years After GlaxoSmithKline (GSK) Meningococcal ABCWY Vaccination in the V102_15 (NCT02212457) and Response to a Booster in Adolescents	<ul style="list-style-type: none"> Infections, Meningococcal 	<ul style="list-style-type: none"> Biological: Meningococcal ABCWY Vaccine Biological: Meningococcal B Recombinant vaccine 	<ul style="list-style-type: none"> GSK Investigational Site Espoo, Finland GSK Investigational Site Helsinki, Finland GSK Investigational Site Helsinki, Finland (and 14 more...)
5	<input type="checkbox"/>	Recruiting	Study to Assess Effectiveness of GlaxoSmithKline's (GSK's) Meningococcal Group B and Combined ABCWY Vaccines in Healthy Adolescents and Young Adults.	<ul style="list-style-type: none"> Infections, Meningococcal 	<ul style="list-style-type: none"> Biological: rMenB+OMV NZ vaccine Biological: Meningococcal Groups A, C, W and Y Conjugate Vaccine (MenACWY) Drug: Placebo (and 3 more...) 	<ul style="list-style-type: none"> GSK Investigational Site Huntsville, Alabama, United States GSK Investigational Site Mobile, Alabama, United States GSK Investigational Site Chandler, Arizona, United States (and 109 more...)

Healthy adolescents



Saez-Llorens et al, HVI 2015

Further studies focused on MenACWY + 4CMenB.....

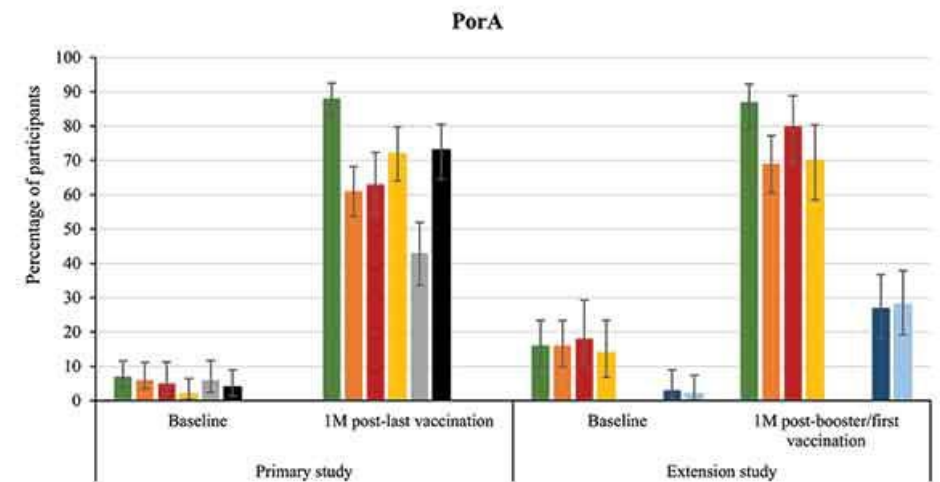
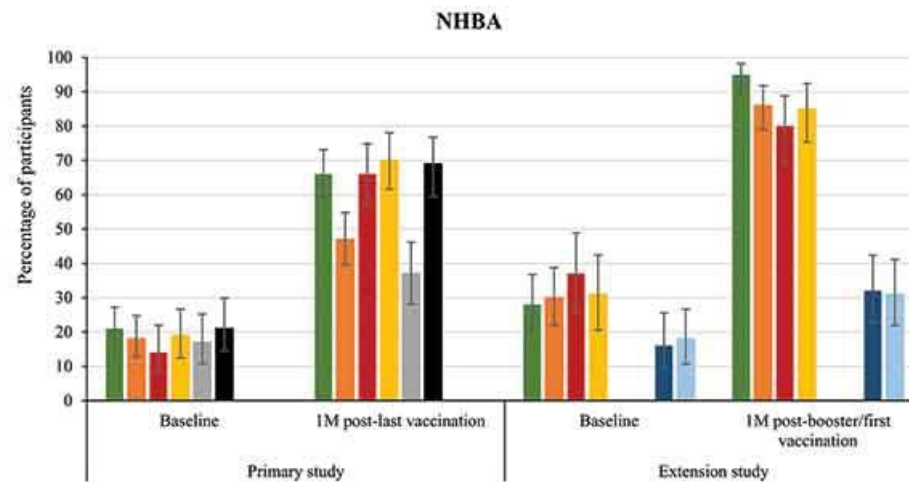
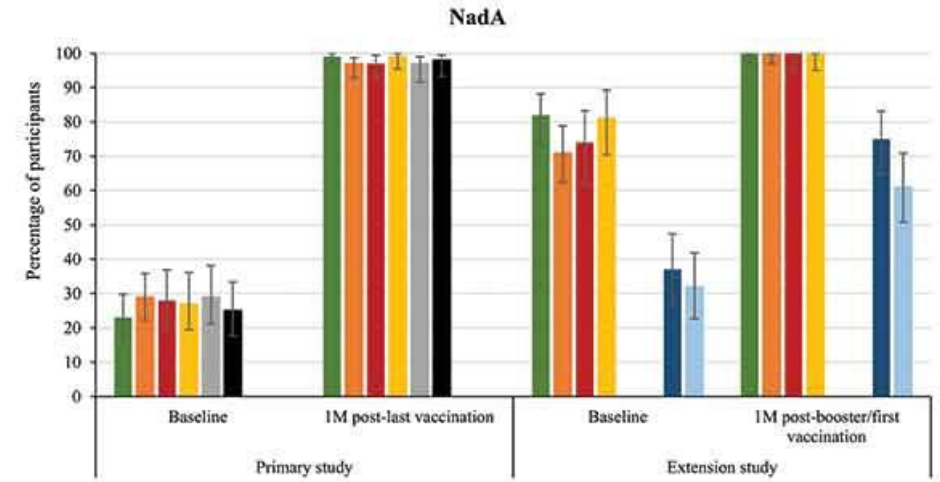
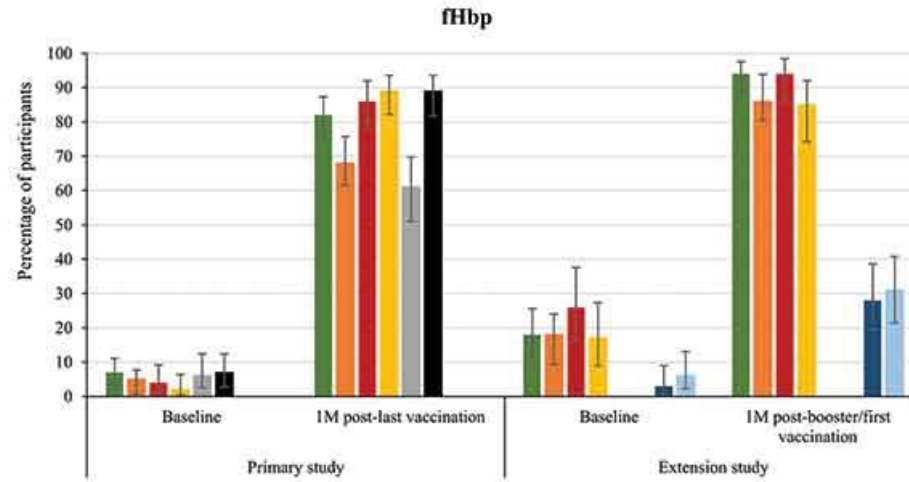


Healthy adolescents aged 10 – 18 years

Primary immunisation and 2 years FU

Healthy adolescents

Immunised with 4CMenB or MenABCWY at variable intervals



% SBA >= 1:4

■ 4CMenB-0-2 ■ MenABCWY-0-2 ■ MenABCWY-0-6 ■ MenABCWY-0-2-6 ■ MenABCWY-0-1 ■ MenABCWY-0-11 ■ Naïve-4CMenB ■ Naïve-MenABCWY

Table 2. hSBA geometric mean titers and between group ratios (MenABCWY-0-2:4CMenB-0-2), at 1 month post-last meningococcal vaccination in the primary study (per-protocol set).

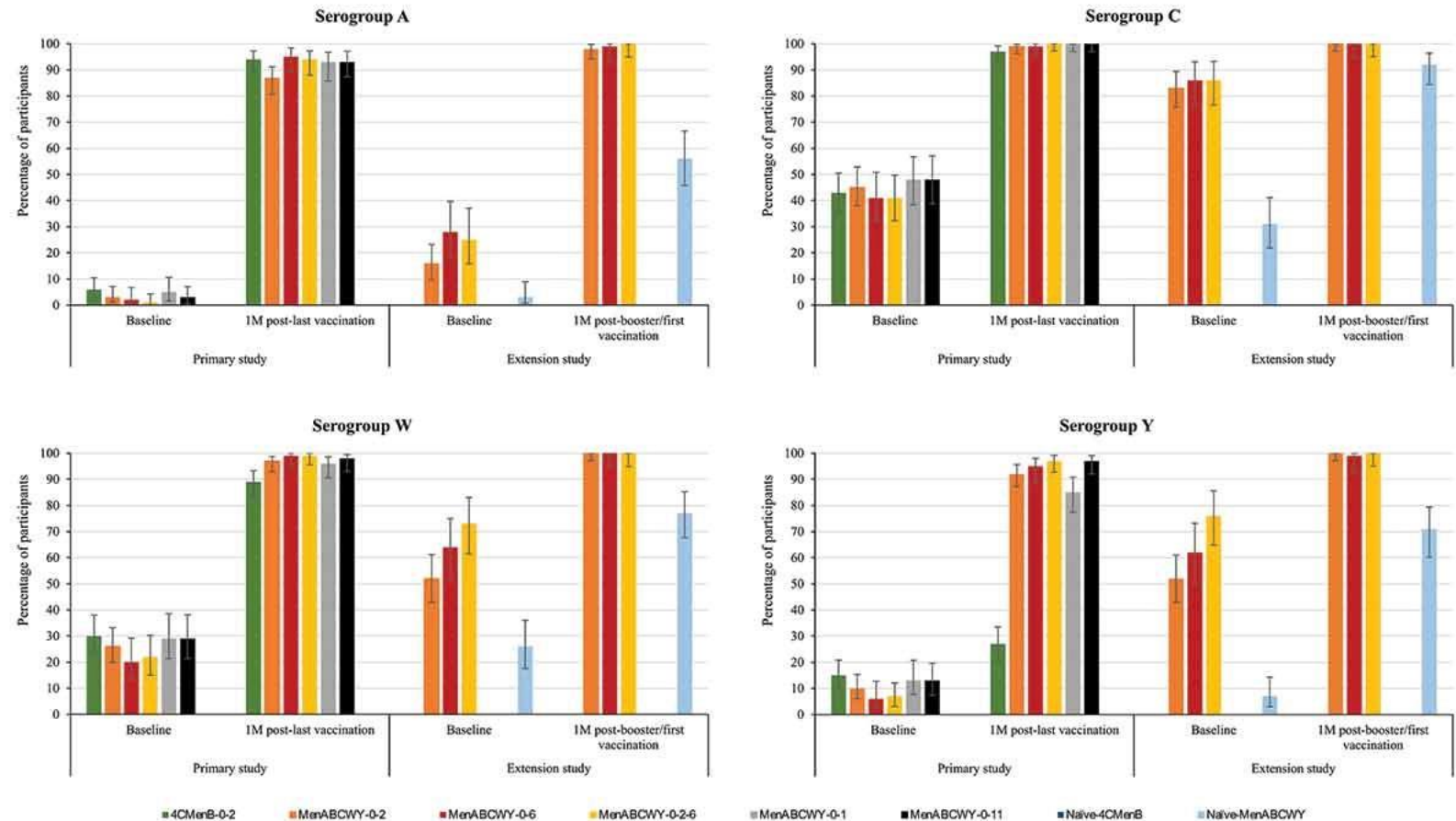
	4CMenB-0-2		MenABCWY-0-2		Between groups
	N	GMT (95% CI)	N	GMT (95% CI)	GMT (95% CI)
<i>fHbp</i>					
Baseline	147	1.31 (1.09–1.57)	155	1.28 (1.07–1.53)	0.98 (0.81–1.19)
1 M post-second dose	150	15.78 (12–22)	158	11.64 (8.61–16)	0.74 (0.53 –1.02)
<i>NadA</i>					
Baseline	143	2.36 (1.70–3.28)	152	2.93 (2.13–4.03)	1.24 (0.89–1.74)
1 M post-second dose	149	229.29 (179–294)	156	150.82 (118–192)	0.66 (0.51 –0.85)
<i>NHBA</i>					
Baseline	148	2.16 (1.61–2.89)	151	2.12 (1.60–2.82)	0.98 (0.73–1.33)
1 M post-second dose	150	11.56 (8.86–15)	154	8.19 (6.31–11)	0.71 (0.54 –0.94)
<i>PorA</i>					
Baseline	147	1.15 (0.95–1.39)	154	1.27 (1.06–1.53)	1.11 (0.91–1.34)
1 M post-second dose	150	24.31 (18–32)	157	11.95 (9.10–16)	0.49 (0.37–0.66)

hSBA, serum bactericidal assay using human complement; 4CMenB, 4-component meningococcal serogroup B vaccine; MenABCWY, pentavalent meningococcal serogroup A, B, C, W and Y vaccine; N, number of participants; GMT, geometric mean titer; CI, confidence interval; fHbp, factor H binding protein; M, month; NadA, *Neisseria* adhesin; NHBA, Neisserial heparin binding antigen; PorA, porin A.

Bolded values indicate that the lower limit of the 95% CI for the GMT ratio (MenABCWY-0-2 group versus 4CMenB-0-2 group) was >0.5 (non-inferiority criterion).

Table 3. Summary of immune responses against meningococcal serogroups A, C, W and Y in the primary and extension studies in selected groups (adjusted hSBA geometric mean titers).

		Geometric mean titers							
		Serogroup A		Serogroup C		Serogroup W		Serogroup Y	
		4CMenB 0-2	MenABCWY 0-2	4CMenB 0-2	MenABCWY 0-2	4CMenB 0-2	MenABCWY 0-2	4CMenB 0-2	MenABCWY 0-2
Primary study	Baseline	1.37 (1.18–1.59)	1.17 (1.02–1.36)	3.46 (2.76–4.33)	3.38 (2.71–4.23)	6.43 (4.46–9.27)	4.75 (3.35–6.73)	1.72 (1.41–2.10)	1.40 (1.14–1.71)
	1M ^a	106.70 (82–139)	68.85 (53–89)	41.25 (32–52)	184.05 (145–234)	138.43 (111–173)	214.70 (173–266)	3.12 (2.34–4.17)	90.61 (68–121)



Reactogenicity MenABCWY

		4CMenB	MenABCWY		4CMenB	MenABCWY
		Any			Grade 3	
Dose 1	Pain	94%	97%		4%	6%
	Myalgia	27%	23%		1%	2%
	Fatigue	56%	52%			
	Fever ≥ 38 C	2%	2%		NA	
Dose 2	Pain	91%	85%		5%	3%
	Myalgia	25%	18%		1%	2%
	Fatigue	50%	44%		3%	3%
	Fever ≥ 38 C	3%	1%		NA	



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6	<input type="checkbox"/>	Recruiting	A Study on the Safety, Effectiveness and Immune Response of Meningococcal Combined ABCWY Vaccine in Healthy Adolescents and Adults	<ul style="list-style-type: none"> Infections, Meningococcal 	<ul style="list-style-type: none"> Combination Product: MenABCWY-2Gen low dose vaccine Combination Product: MenABCWY-2Gen high dose vaccine Combination Product: Placebo (and 2 more...) 	<ul style="list-style-type: none"> GSK Investigational Site Darlinghurst, New South Wales, Australia GSK Investigational Site Nedlands, Western Australia, Australia GSK Investigational Site Gent, Belgium

Additional study incorporating '2Gen' MenB vaccine



Next steps

- Study of MenABCWY 2Gen in infants launches Oct 2021
- Stage 1
 - UK
 - Spain
 - Poland